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Valuing Sustainable Change in the Built Environment: Using SuROI to appraise built environment projects

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Abstract

Purpose – The paper aims to assess the strengths and weaknesses SuROI to determine it suitability as a means through which social value can be predicted in line with public procurement directives and the Social Value Act, whilst at the same time as fitting the developer's business model and CSR commitments.

Design/methodology/approach – Using a multi case design, findings from a comprehensive evaluation of three major housing-led mixed use regeneration developments are presented. The tree case study locations were selected on the basis of the developer's strong commitment to place-making and social sustainability. Together with a strong strategic desire to reposition their organisation away from the traditional business as usual profit led model.

Findings - Whilst the Social Return on Investment methodology is applicable to the charity sector, its use in the built environment is highly questionable. When applying the model to the mixed use housing projects the authors identified a number of technical limitations to the model, *inter alia* a lack of suitable proxies and especially proxies relating to the built environment for the valuation of identified outcomes, the use of monetisation as a evaluating measure which did not support some of the more abstract or softer benefits identified, problems collecting, identifying and evaluating data to inform the model given the complexity and scale of the project, the significant time and expense associated with the valuation and finally the inability to benchmark the report on completion. These findings have implications for the social housing providers and local authorities looking to use SuROI to evaluate potential built environment projects.

Originality/value – The paper offers unique insights into the viability of using existing social value measurement methodologies. The paper identifies the significant limitations associated with the SuROI methodology.

Keywords – Social Value, Sustainable Return on Investment, UK, case study.

Paper type – Research paper

Introduction

The enactment of the Public Services (Social Value) Act 2012 in England and recent changes to EU procurement directive 2012/24/EU translated into UK law via the Public Contract Regulations 2015 have reinforced the importance of measuring social value delivered by public and third sector organisations. Yet the exact meaning of social value remains open to contention since no single authoritative definition of social value exists (Wood and Leighton, 2010; Cabinet Office, 2015). Nevertheless, several leading organisations have attempted to define the concept, albeit from very different perspectives. Social Value International (N.D) defines social value as "*the value that people place on the changes they experience in their lives*". A similar but more refined definition of social value is advanced by the Chartered Institute of Housing (2015:3), for which social value represents "the wider non-financial impacts of programmes, organisations and projects, especially on the wellbeing of individuals, communities and the environment". Whilst there appears to be some consensus about the basic tenets of social value, there remains confusion about how this is to be delivered. For instance, public policy in the UK views social value as part of the procurement strategy for public sector projects with the above benefits encapsulated in a value-led procurement strategy (Cabinet Office, 2015). However, the Social Impact Investment Taskforce, set up by the G8 nations in 2013, argue social value can have a wider impact if it is aligned with a more ethical approach to investment, whereby social value is delivered through "*investments that intentionally target specific social objectives along with a financial return and measure the achievement of both*" (Social Impact Investment Taskforce, 2014:1) either in the public or private sectors.

Thus social value is seen as an integral part of the procurement process, and a key measure of value for money in the UK public sector. Whilst it is enforced through regulatory frameworks such as the National Planning Policy framework (Department of Communities and Local Government, 2012), the delivery of social value through built environment projects presents an enduring challenge for local authorities and construction professionals alike (Chevin, 2014, Temple *et al*, 2014, Burke and King, 2015). As a result, significant emphasis has been placed on the need for projects and therefore built environment professionals to more holistically and explicitly include the delivery of socio-economic change within their project appraisals (Chevin, 2014, Higham *et al*, 2016). Despite this, literature suggests socio-economic aspects of regeneration are missed as a result of adopting conventional project management approaches to deliver regeneration initiatives. This results in narrow evaluations that use conventional approaches to development appraisal including, for example, land valuation methodologies and parametric construction cost models (Fortune and Cox, 2005). As a result, this paper argues for the appraisal of sustainable benefits alongside the costs of major regeneration projects at the project feasibility stage, in order to incorporate the potential benefits of social and economic inclusion within the project's community. The adoption in practice of such a broader sustainability-based benefits approach to early stage project evaluation should be fundamental to any form of public investment in major regeneration provision in order to promote stakeholder prosperity.

A long line of built environment tools, metrics, frameworks and models has been developed with the aim of predicting sustainable benefit. According to Hornerand

Levitt-Therivel's 2004 comprehensive review as part of an EPSRC funded study, the vast majority of these methods have tended to be based on multi-criteria analysis (MCA) and the weighting and scoring of pre-identified criteria. Proponents of these techniques such as Ding (2005), Frame and Vale (2006), Cole (2007), Ding (2008) Carter and Fortune (2008), Rees (2009) and Higham *et al* (2016) argue that evaluation frameworks provide fundamental building blocks for comprehensive change, by providing practical, transparent and simple to understand criteria to which the industry can respond in manageable steps, thereby empowering construction professionals to think about sustainability in an experiential way, with the safety net of expert guidance, checks and balances (Kaatz et al, 2006; Cooper and Symes, 2008; Schweber, 2013). Despite the strong support for criteria based appraisal systems within the literature, there are a number of problems with the MCA approach. The first is the usability of the models developed. Out of the 600 models reviewed by Horner (2004) and Levitt-Therivel (2004), only 20% (104) were deemed to be fit for purpose and thus usable in practice. A significant limitation often attributed to MCA-based models is their lack of uniformity and their inherent complexity (Vanegas, 2003; Carter and Fortune, 2007). Secondly, there is the lack of transferability in the results of MCA-based methods as they tend to be qualitative in nature (Vischer, 2009) and sector specific in design (Turcu, 2013; Higham et al, 2016). In order for best practice to be disseminated effectively, there is a requirement for robust quantification of sustainable benefit beyond MCA based scores (Watson and Whitley, 2016) and a need for the method of appraisal to be generalisable across the built environment. Thirdly, the results lack relatability for decision-making that is necessarily based on economic valuation (Watson and Whitley, 2016). The built environment is a profit and return driven sector so it follows that any project feasibility appraisal adopts a monetary unit of analysis to compare project alternatives against key financial metrics, therefore if sustainable objectives are to be embedded within this process, they need to be presented in a way that can be easily factored into project budgets and benchmarked against other financial measures. Finally Ding (2005) argues that whilst MCA can result in a very sustainable building, because MCA does not interface with financial models, the resultant project could be extremely expensive to deliver often exceeding the available financing for the project's delivery.

The need to overcome the limitations of existing MCA-based methods by capturing and presenting sustainable objectives using financial metrics dovetails well with the increasingly popular concept of social value, and the drive, within the third sector, to objectively demonstrate social return (Wood and Leighton, 2010). Literature (refs) from the third sector reveals the dominance of *Social Return on Investment* (SROI) and this approach to social value appraisal has become the charity and social enterprise sectors' acknowledged best practice to appraising and demonstrating the delivery of social value as reinforced by HM Treasury best practice guidance (Arudson *et al*, 2010; HACT, 2015). The transferability of this method from the charity sector into the built environment has been the focus of a number of previous studies (Aspden *et al*, 2012; Bichard, 2015; Bridgeman *et al*, 2015; Bridgeman *et al*, 2016; Watson *et al*, 2016; Watson and Whitley, 2016). Collectively, this body of literature demonstrates that methodologies derived from the basic tenets of SROI can be applied within the built environment. Although thus far this body of work has only considered retrospective applications, suggesting that there is a need to appraise whether SROI derived methodologies can dovetail into existing built environment financial modelling to provide forecasts of the value of the sustainable benefits that

are likely to emerge. It was therefore resolved that this research would appraise the strengths and weaknesses of Sustainable Return on Investment (SuROI), a SROI derived methodology designed by Bichard (2015) to dovetail into existing project feasibility estimating techniques to determine first, whether the method provides a suitable means through which sustainable benefit can be objectively forecasted and integrated into existing project feasibility appraisal practice, in line with the Public Services (Social Value) Act 2012 for the public sector. Secondly, the research determines if the methodology can be aligned with private developer's business models and Corporate Social Responsibility (CSR) commitments. This paper reviews the relevant literature related to sustainability, social value and its evaluation within the built environment in order to establish the current state of knowledge. The stage-by-stage application of SuROI to three case study projects delivered by a major property developer where SuROI has been integrated within existing project appraisal methodologies to forecast the anticipated social value is outlined in the methods section followed by a summary of the SuROI results. The discussion outlines the methodological challenges faced and the modifications required, and shares the lessons learnt from this process. The conclusion offers recommendations for the future application of SuROI into the built environment.

Sustainable Development and the Built Environment

Sustainable development, evolved from the numerous environmental movements in earlier decades eventually growing into a wider discourse in the 1980s when sustainability became an accepted method of balancing environmental resource protection, social progress, social justice, economic growth and importantly stability for now and for the future. Although a myriad of definitions have been proposed which encompass these ideals, the most widely used and accepted international definition of sustainable development is that provided by Brundtland (WCED, 1987):

> *Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.*

Although this statement is the most widely accepted definition of sustainability, it is not without its critics. These arguments are encapsulated in the work of Brandon and Lombardi (2011) who suggest, as a solution to the criticisms of the earlier definition, the following:

> *Sustainable development is a process, which aims to provide a physical, social and psychological environment in which the behaviour of human beings is harmoniously adjusted to address the integration with, and dependence upon, nature in order to improve, and not to impact adversely, upon present or future generations.*

Within the UK the concept of sustainability embraces other dimensions of sustainability beyond the environmental-orientated definition to include social and economic aspects of development. Those involved with the delivery of the built environment have made significant progress towards embracing sustainable development (Sjostrom and Bakens, 2010). Yet, while the issues for exploring environmental sustainability are well rehearsed and known, the apparent disregard for the social dimension of sustainability cannot easily be ignored. The social dimensions are often less appreciated and addressed by stakeholders involved in the development process (Edum-Fotwe and Price, 2009). Consequently the concept of social sustainability has been under-theorised, with few attempts made to define social sustainability as an independent dimension of sustainable development (Colantonio,

2009). Thus Colantonio (2009) advocates the definition of social sustainability provided by Polese and Stren (2000:15-16) as the closest literature has come to providing a definition for socially sustainable development:

> *Development (and/or growth) that is compatible with harmounious evolution of civil society, fostering an environment conducive to the compatible cohabitation of culturally and socially diverse groups while at the same time encouraging social integration, with improvements in the quality of life for all segments of the population.*

Valuing Sustainable Change within the Built Environment

Extensive work has been completed to assist built environment professionals to appreciate the importance and significance of social sustainability in the evaluation of construction projects. However, the focus of this has been on understanding the impacts that social sustainability might have on the success or otherwise at the proposal stage (Colantonio, 2007; Dillard et al, 2009; Colantonio and Dixon; 2010, Vallance et al, 2011, Dempsey et al, 2011, Woodcraft, 2011, Weingaertner and Moberg, 2011; Murphy, 2012; Woodcraft, 2012) or at the evaluative stage of projects, where appraisal of the expectations of socio-economic and environmental performance can be undertaken through the use of various post-occupancy analyses (Magee et al, 2012; Dixon, 2012; Slater *et al*, 2013; Watson *et al*, 2016; Watson and Whitley, 2016). Emmanuel (2012) suggests that the adoption of such *ex-post* analysis provides built environment professionals with an invaluable opportunity for future learning and continuous reflection. Magee *et al* (2012) employed this approach at an early stage in Australia's development of a Social Sustainability Survey; Dixon's (2012) work, with the Berkeley Group, focused on developing a social sustainability appraisal framework for new housing development; and finally Slater *et al* (2013) worked with the London and Quadrant Housing Association (L&Q) to develop a post-occupancy social impact assessment tool for regeneration projects. All these examples evidence the capacity of such frameworks to provide a suitable mechanism for auditing the social impact of completed projects by evaluating the extent to which the development facilitated social interaction, created high-quality public space and improved the quality of life for both its occupants and the wider community (Silberberg *et al*, 2013). Yet practical attempts to monetize the decreased or added sustainable value of development schemes has thus far had limited critique in the existing literature (Bichard, 2015; Watson *et al*, 2016; Watson and Whitley, 2016) despite the increased significance associated with demonstrating social value through the monetisation of the socio-economic and environment benefits delivered by regeneration in national policy frameworks (Young, 2015) and by the construction sector particularly (Burke and King, 2015)

In the UK there are public or third sector owned and managed housing bodies providing homes for predominantly lower income tenants. These social landlord organisations with their regulatory commitments to communities in their areas of operation, coupled with the traction associated with being a significant part of the UK housing context, mean that they are at the forefront of the development of tools for assessing social value. In an attempt to map the extent to which social impact assessment is used in this sector, a qualitative study undertaken by Wilkes and Mullins (2012) involving 34 social housing organisations revealed a relatively high incidence in the use of tools and frameworks designed to measure social impact. The

drivers for the use of these methodologies include the desire both to evidence the social impact of their interventions to key stakeholders including tenants and funders, and to proactively project manage the delivery of the sustainable impact that the organisations achieved as part of their day-to-day activities. A subsequent study undertaken by Higham *et al* (2016) reaffirmed the sector's strong commitment to demonstrating the wider non-monetary benefits of their investment to stakeholders involved in the delivery of social housing projects. Despite calls within the literature for the increased adoption of sophisticated multi-criteria composite frameworks capable of facilitating a comprehensive evaluation (Brandon and Lombardi, 2011), Higham *et al's* (2016) work revealed that built environment professionals working in the social housing sector routinely adopted additional frameworks that generated monetary valuation of project's less tangible outcomes As a result Social Return on Investment is typically adopted alongside more traditional project appraisal tools for the appraisal of social housing projects. This is normally as a direct result of SROI's ability to identify and value intangible benefit or those in-direct outcomes that exist outside classical economics view of the price mechanism such as delivering enhanced wellbeing for residents (Vardakoulias, 2013).

Cost Benefit Analysis (CBA) endures as the predominant tool used to assess the relative economic merits of public and third sector built environment projects (HM Treasury, 2003; Ding, 2005; Brandon and Lombardi, 2011; Bichard, 2015). CBA is designed to capture the trade-off between the total benefits received by society from the proposed project against the anticipated societal costs. Literature, however, suggests the use of price determined from existing market transactions to evaluate social and environmental costs and benefits present a serious limitation to those seeking appraising sustainable benefit (Spash, 1997; Ding, 2005). At the core of this argument are concerns that the price mechanism is unable to value the indirect impacts of a project that form a major part of the sustainable benefit likely to emerge, given that such benefits are typically of an intangible nature such as wellbeing or stronger communities making them immensely difficult to value using conventional technics (Vardakoulias, 2013; Bichard, 2015). Thus such benefits are at best seen as secondary or at worse disregarded in the final analysis of a project's merit when CBA is adopted. In an attempt to overcome these limitations, the New Economics Foundation (2013) identifies the introduction of alternative forms of cost benefit analysis designed both to complement the conventional approach and to overcome these difficulties, by providing additional mechanisms to allow project teams to capture the wider social impacts of both policy and publically supported projects (Fujiwara, 2010; Fujiwara and Campbell 2011). These alternative forms include Social Cost Benefit Analysis (SCBA), a form of cost benefit analysis recommended for the evaluation of large scale policy initiatives where decision makers seek to express a proposal's value to UK society (Dunn, 2012), and SROI, an adjusted form of CBA adopting a much broader view of value that places far more importance on the appraisal of impact and outcomes associated with aspects of wellbeing and stronger communities that sit at the core of regeneration activities (Nicholls *et al*, 2012; Vardakoulias, 2013).

Assessment methods such as SROI have sought to solve the problems associated with using CBA for sustainability evaluation through its focus on broader indicators encapsulating social, economic and environmental costs and benefits (Rotheroe and Richards, 2007). The method was developed by the Roberts Enterprise Development

Fund in San Francisco (Emerson and Twersky, 1996) before being refined initially by the Harvard Business School (Maughan, 2012) and subsequently by both the SROI network and the New Economics Foundation (NEF) in the UK in the mid-1990s (Nicholls *et al*, 2012). These refinements increased the emphasis on multiple stakeholder perspectives whilst introducing a standardised methodology for application. The resulting SROI model continues to use CBA's basic premise, seeking to evaluate the trade-off between societal benefit and project costbased on monetary values, but does not attempt to attribute monetary valuations directly to intangible outcomes. Instead it translates the intangible outcomes associated with social change into data by identifying the likely outcomes, determining how those might be measured and finally giving them a monetary value based on a suitable financial proxy (Nicholls *et al*, 2012).

Whilst this technique constitutes a crucial development in capturing public and third sector outcomes, there is limited empirical evidence of its use (Millar and Hall, 2013). Nevertheless recent studies conducted within the built environment illustrate the potential benefits of SROI to support existing monetary appraisals of the wider sustainable benefits of built environment projects in the UK. Aspden *et al* (2012) first demonstrated the applicability of the SROI methodology to the built environment sector through their appraisal of the social value created as part of an estate-wide low carbon retrofit scheme in Salford. The work emphasised the applicability of SROI as a social value indicator, allowing the social housing provider to demonstrate the wider social benefits of their investment alongside both the traditional economic benefits of reduced energy consumption over the lifecycle of the products and the obviously positive environment credentials associated with lower carbon emissions. Bridgman *et al's* (2016) subsequent evaluation of the Construction Youth Trust's work with Network Rail illustrates how the SROI methodology can be adopted to appraise the wider and often overlooked socio-economic benefits that construction projects bring to the local community. In this context, the work showed that a social return on investment ratio of 1:5.43 had been achieved by using Network Rail's engineering projects as a vehicle to empower school leavers to consider a career in Engineering. Similarly, Watson and Whitley (2016) adopted the methodology to carry out three detailed post-occupancy evaluations of recently constructed cancer care centres to evidence how the built environment can be designed to have a positive impact on building users, in this case, patients and their social networks, again revealing the positive impact that buildings have on intangible outcomes such as patient wellbeing.

At the same time as the literature evidences the applicability of techniques such as SROI to the built environment, it also misguidedly leads proponents of these techniques to assert that, provided that the change in lives is known, that the intervention that causes the change is clear and that the cost of these consequences can be obtained, it can always be possible to calculate the monetary value of change (Bichard, 2015). There is a cacophony of argument against such a proposition, with several practical and implementation difficulties related to its use noted in the small but growing literature niche around this critique (for example Darby and Jenkins, 2006; Peattie and Morley, 2008; Bridgeman, 2015; Bridgeman *et al*, 2016; Watson *et al*, 2016; Watson and Whitley, 2016). The most contentious issue is the quantification and monetisation of intangible social outcomes using financial proxies (Arvidson *et al*, 2013; Krlev *et al*, 2013) which Krlev *et al* argue can lead analysts to take some extremely imaginative and adventurous pathways when appraising social

return, leading to concerns over the lack of rigour and objectivity embedded within the process and the danger that the process will provide highly misleading pictures of the sustainable benefit arising from the project under review. Despite this, SROI continues to develop traction in the UK social enterprise sector as the primary mechanism for evidencing organisational impact, with endorsement from both the Cabinet Office and Scottish Government (Watson and Whitley, 2016).

Yet this contention emanates from the very core of SROI, due in part to the absence of robust theoretical frameworks underpinning the valuation of the intangible societal features that the methodology explicitly sets out to appraise (Fujiwara, 2015). Despite concerns about inaccuracy, ambiguity and a lack of underlying theoretically informed valuation practices, Bichard (2015) explains valuations are typically developed using a combination of primary data collection and statistical trends. This position is contradicted by Bridgeman *et al* (2016) who note that social value analysts are adopting mixtures of secondary financial proxies from sources such as the Global Value Exchange and the Housing Associations Charitable Trust (HACT) database to evaluate the social value derived from the intangible societal features attributed to the intervention under review. This approach is similar to that proposed in Bichard's earlier work (2015) funded by the Royal Institution of Chartered Surveyors (RICS) which sought to amend conventional SROI methodology for application within the built environment. The full SuROI framework as proposed by Bichard (2015) is depicted in figure 1. As part of the amendment, Bichard espoused the removal of primary qualitative data collection amongst stakeholders, which he argued would be impossible for predictive reviews of proposed projects, where the full range stakeholders may yet to be ascertained. In its place, he advocated the use of wellbeing valuations drawn from Fujiwara's (2013) work with social housing providers and government departments which analysed major longitudinal national datasets resulting in hundreds of average and specific values for a diverse range of wellbeing indicators considered common to regeneration and other built environment projects.

Stage One
Undertake full SROI analysis using framework proposed by Nicholls et al (2012)

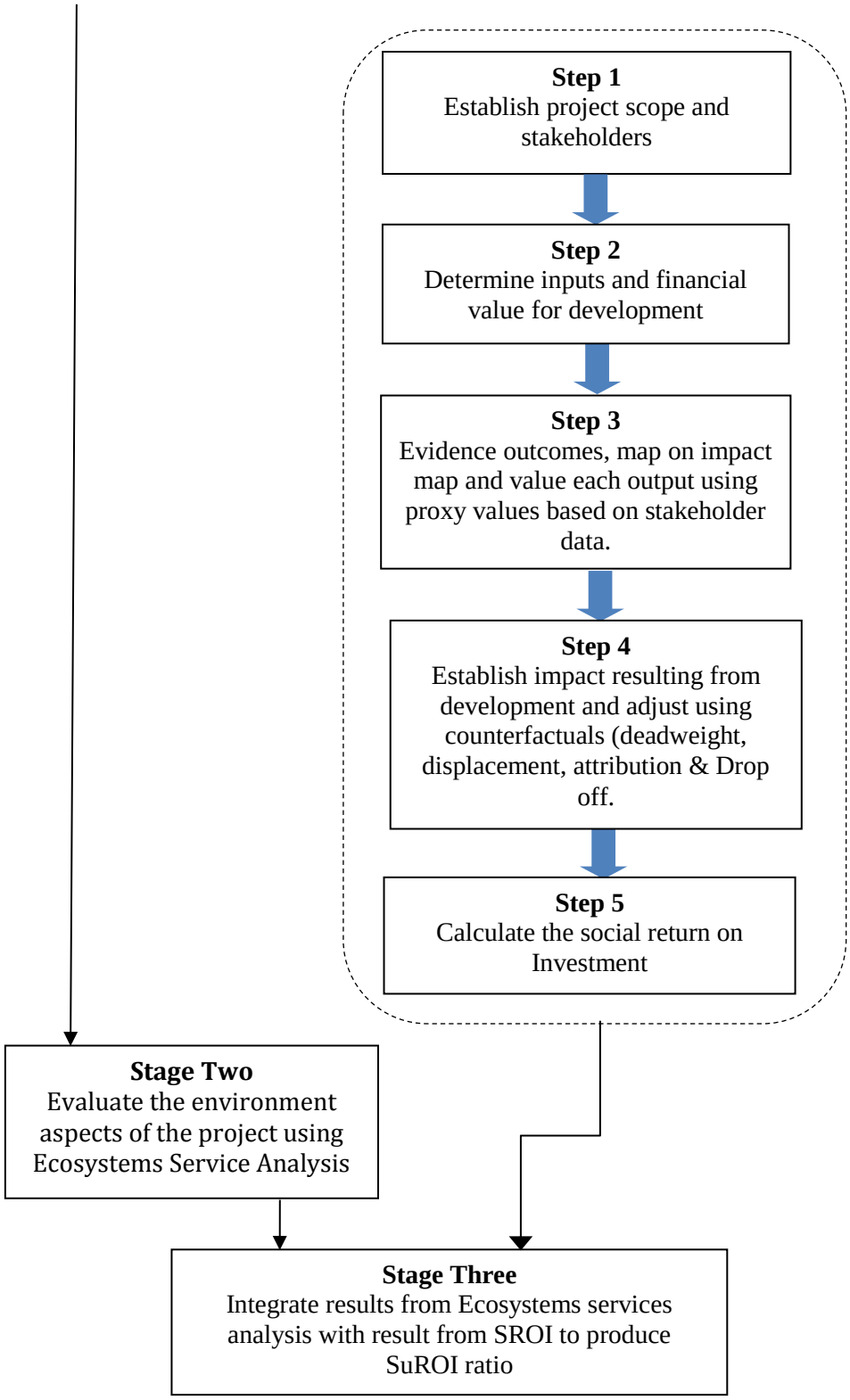

Figure 1: The SuROI Process (Bichard, 2015)

Brandon and Lombardi (2011:24) make clear that sustainability appraisal frameworks used in the built environment must address not only the social and economic benefit

of the scheme, but also acknowledge the environmental aspects of sustainability. Whilst initial studies undertaken by Watson *et al* (2016); Bridgman *et al* (2016) and Watson and Whitley (2016) have illustrated the potential usefulness of the SROI methodology within the built environment, it is also clear that these studies have focused exclusively on the social benefits construction can have either through school outreach (Bridgman *et al*, 2016) or users of buildings through social wellbeing (Watson *et al*, 2016; Watson and Whitley, 2016). Existing literature has so far failed to demonstrate how SROI can provide a holistic evaluation of sustainable value within the built environment. To overcome this limitation Bichard (2015) proposed a revised form of SROI analysis, SuROI, which utilises the existing SROI framework alongside ecosystems services analysis. This technique is derived from ecological economics that allows the outcomes of environmental and ecological impact assessments such as BREEAM, a widely adopted framework for the appraisal of sustainability within the built environment to be valued and included as part of the overall analysis (Schweber, 2013). A comprehensive review of the appraisal tools outlined is provided in table 1.

The literature reviewed above indicates that Social Return on Investment is a potentially useful tool for evaluating the sustainable value delivered as part of built environment projects. However, evidence suggests that its use is limited and largely restricted to post-occupancy appraisals of the social value delivered. Yet the provisions of both the Public Services (Social Value) Act 2012 and more recently planning requirements require social and sustainable value to be predicted as part of the planning application. Whilst Bichard's (2015) revisions to the SROI methodology present a potentially useful tool for the early stage evaluation of proposed built environment projects, the tool has thus far only been applied to small scale, targeted interventions. These include crime reduction interventions in the UK social housing sector and health and wellbeing interventions as part of mixed-use regeneration development in the USA (Bichard, 2015, 2016). Despite these case studies confirming SuROIs applicability to identify and predict sustainable value in narrowly defined applications. It nevertheless remains unclear whether SuROI can be used to appraise the full range of sustainable benefit likely to be delivered by proposed built environment projects. As a result this study resolved to apply SuROI to a series of large-scale commercial urban regeneration projects to appraise its appropriateness in UK practice.

Table 1: Summary of Social Sustainability Appraisal Methods for the Built Environment

Method/Tool	Developer	Description	Benefits	Limitations
Social Enterprise Balanced Scorecard (SEBS)	Robert Kaplan and David Norton BSC Model (1996) modified for the social enterprise sector by Social Enterprise London.	An internal performance measurement tool that uses a strategy map to represent strategic objectives for multiple bottom lines including social impact. Identification, achievement and measurement of between two and four key goals (Somers, 2005)	Useful as an internal business process for strategy development. As the method can be seen as a generic strategic performance management and measurement tool (Hanse and Schaltegger (2014) Overcomes limitations of other appraisal frameworks by allowing three pillars of sustainability to be integrated into a single framework.	Performance management tool that provides retrospective performance appraisals of sustainability performance. Mainly uses qualitative metrics so will not integrate well into existing financial models used at project feasibility.
Cost Benefit Analysis	Jules Dupuit (1848) later refined by Alfred Marshall. Practical benefits of CBA defined in Federal Navigation Act 1936.	Project feasibility appraisal tool. Measures and compares total costs (all expenditure associated with delivery including costs to public and community in environmental impact terms) against anticipated benefits (revenues, productivity improvements and environmental benefit) of various project options (Brandon and Lombardi, 2011:102)	Systematic way the technique deals with costs and benefits providing a common metric for ease of comparison (Brandon and Lombardi, 2011:102). Integrates well with other financial measures	Focuses on market transactions and price for valuations. Environment effects of projects cannot be prices as easily. Use of shadow pricing is problematic and can mean environmental issues are under valued (Ding, 2008)
Social Cost Benefit Analysis	Developed by Little and Mirrlees and UNIDO 1960s in response to need to construct basic infrastructure (Little and Mirrlees, 1974)	Social Cost Benefit analysis introduces Social Value into the cost/benefit calculation allowing social or sustainable return on investment to be appraised (Vardakoulias, 2014)	Allows a systematic evaluation of multiple benefits likely to emerge from the development across the triple bottom line (social, economic and environmental) of sustainable development (Nicolles *et al*, 2012)	Analysis tends to be focused on the economic costs and benefits such as employment generation. Whilst social and environment aspects are treated as secondary considerations as they rely on non-market valuation techniques (Wenger and Pascaul, 2011; Vardakoulias, 2013)
Social Sustainability Survey	Developed by Liam Magee, Andy Scerri and Paul James at RMIT University, Australia	Social Survey designed to measure levels of social sustainability within existing communities.	All aspects of sustainability are appraised using quantitative metrics. Allows users to benchmark the sustainability of different communities to understand need for investment or other corrective	Survey designed for Australia only. Consequently the measures adopted are specific to Australia preventing uniform application in other countries.

			actions.	
Berkley Social Sustainability Framework	Developed by Tim Dixon working with The Berkeley Group in the UK.	Social survey designed to measure the level of place making and social sustainability delivered from a new housing development by benchmarking the survey results against national datasets at the lowest super-output area or ward level.	All aspects of sustainability are appraised using quantitative metrics. Allows users to benchmark the sustainability of different communities to understand need for investment or other corrective actions.	The survey is retrospective providing only a post-occupancy appraisal of sustainability.
L&Q Post-occupancy Social Impact Assessment	Social impact appraisal of regeneration undertaken by Imogen Slater, Susan Lelliott, Alison Rooke and Gerald Koessi from Goldsmiths for L&Q Group.	Bespoke social impact assessment framework using multiple methods including: analysis of quantitative secondary data provided by the client. However, the findings were subsequently triangulated via stakeholder interviews and observational visits to regenerated neighbourhoods (Slater *et al*, 2013)	Provides a post-occupancy evaluation framework through which the social value delivered by regeneration interventions can be appraised.	Uses a mixture of different tools to create a bespoke picture for one organisation. The researchers do not explain in detail how the framework can be implemented by others.
Social Return on Investment (SORI)	Roberts Enterprise Development Fund in mid 1990s in the US; Further refined in UK by New Economics Foundation (NEF); SROI Network founded in 2008 renamed Social Value UK in 2014	Outcomes based measurement tool related to cost benefit analysis. Project/Activity focus. Mixed method: Quantitative, stakeholder engagement, Valuation via financial proxies to produce SROI ratio of costs to social returns. Also produces a narrative of the organisations value creation (Watson and Whitley, 2016)	Produces a transferable financial metric in ROI (return on investment) format language. Dovetails well into existing feasibility study methodologies. Credible results based on actual data and proxy research. External validation through Social Value UK (Watson and Whitley, 2016)	Requires stakeholder engagement when stakeholder not fully identified at outset so they cannot be invited to participate in primary data collection. Or their view will be affected by potential bias (e.g. optimism bias). Very time consuming to implement.
Social Accounting and Auditing	Social Audit Network	Organisational framework for monitoring, evaluation and accountability. Measures and analyses the social and environmental performance of the business or organisation using accounting principles (Bebbington and Thomson, 2007)	Flexible and holistic method for evaluating organisational performance and impact as part of CSR (corporate social responsibility commitments)	Time intensive, not yet recognised by funders. Difficult to use as a predictive tool – provides a retrospective record of performance.

Wellbeing Valuation	Devised by Daniel Fujiwara	Underpinned by Welfare economics methods of valuation. Data on people's subjective wellbeing (SWB) from large surveys is analysed using statistical or econometric techniques to assess how different life events impact on SWB.	Provides objective data that can be uniformly applied across projects and benchmarked. Removes need for expensive primary data collection.	Lacks direct relationship with specific nature of the project. Relies on experiences of average person nationally (Bichard, 2015)
Ecosystems Services Analysis	Millennium Ecosystems report.	Outcomes based measurement tool related to cost benefit analysis. Project/Activity focused on the valuation of ecological sustainability. Valuations produced via international financial proxies.	Provides objective data relating to the wellbeing value ecosystems generate that can be uniformly applied across projects and benchmarked.	Lacks direct relationship with specific nature of the project. Relies on experiences of average person nationally (Bichard, 2015)
Social IMPact measurement for local economics (SIMPLE)	Social Enterprise London and University of Brighton	Organisational framework to understand, measure and communicate impact. Internal strategic review combined with outcomes based assessment. (Watson and Whitley, 2016)	Quantifiable data collection. Strategic perspective to data analysis. Holistic use across various levels of organisation (Watson and Whitley, 2016)	Time intensive at the beginning. No external validation or certification (Watson and Whitley, 2016).
Sustainable Return on Investment (SuROI)	Developed by Professor Erik Bichard (2015), with research funding from RICS.	Outcomes based measurement tool related to cost benefit analysis. Project focused on the valuation of sustainable benefits within the built environment.	Produces a transferable financial metric in ROI (return on investment) format language. Dovetails well into existing feasibility study methodologies. Credible results based on actual data and proxy research. E	Overcomes the limitations associated with the application of SROI by integrated ecosystems services valuation and Wellbeing valuation. Thus removing the need for primary data. Provides forecasts for sustainable value delivered by a project.

Research Design

Research which considers early stage sustainability-led appraisals of built environment projects has increased significantly with the publication of numerous studies appraising the relative merits and indeed severe limitations of over 600 different sustainability evaluation frameworks (Higham *et al,* 2016), the majority of which, Brandon and Lombardi (2011) point out, fail to reflect the complexities they are designed to address. As a result, this study resolved to appraise the applicability of the SuROI methodology by using it to undertake predictive evaluations of three multi-million pound regeneration projects delivered by a private sector property development organisation in South East England.

The research approach for this study required the researchers to appraise the suitability of SuROI as a sustainability and social value appraisal methodology for the built environment using empirical testing,. As previous studies examining the applicability of social value methodologies in the UK and overseas (Rotheroe and Richards, 2007; Bichard 2015; Watson *et al,* 2016; Bridgeman *et al* 2016) made clear, the research methodology adopted needed to be one in which the context was paramount. In such circumstances Fellows and Liu (2008) advocate the use of case study research. Yin (2014:24) defines this approach as "*an empirical inquiry that: investigates a contemporary phenomenon within its real life context, especially when the boundaries between phenomenon and context are not clearly evident"* and identifies several points within this definition that typify case study research. First, a case study is involved with empirical inquiry and therefore relies on the collection of evidence to determine what is happening. Case studies focus on a phenomenon in context, typically in situations where the boundary between the phenomenon and its context is unclear. It is therefore useful for this type of study to ask a how or why question about a contemporary set of events over which the investigator has little or no control (Robson, 2002; Yin, 2014). These features, and the predominant use of case studies in earlier studies on social value appraisal, would suggest the adoption of a case study approach provides the most appropriate methodology for this research.

Remenyi *et al* (2002) and Yin (2014) identify a set of essential requirements for the design of case study research, including: the research must tell a story; it must draw on multiple sources of evidence to enhance construct validity; its evidence must be based on triangulation; it provides meaning in context; it demonstrates both an in-depth understanding of the central issue and a broad understanding of related issues and context; it has a clear focus on either an organisation, situation or context; and, finally, it is reasonably bounded. To achieve this, Yin (2014) identifies two main approaches to case study research: single or multiple case designs. Literature related to case study research strongly advocates adoption of multiple case designs, asserting them to be arguably more robust as they allow generalisations to be strengthened and broadened within the research design (Stake, 2005; Proverbs and Gameson, 2008; Yin, 2014). It was therefore resolved to apply SuROI to three regeneration projects (see Table 2) using a literal replication whereby the cases are designed to corroborate each other enhancing external validity (Yin, 2014). To enhance the reliability of the research, each case has been appraised in accordance with the five-stage methodology devised by Nicholls *et al,* (*2012*) and adopted by Bichard (2015). The three projects, delivered by a major public limited property development company were similar in purpose and design, in that they were all large-scale housing dominant mixed-use

regeneration projects with a strong focus on delivering social benefit to the wider community. Selected using convenience sampling from the developer's portfolio all the projects were all at the pre-planning phase at the time of the research in Autumn 2015. Although they varied significantly in geographical location (two in London and one on the South Cost of England), scale, value and development strategy (see table 5 for full details). However, the developer expressed a clear commitment to embedding Corporate Social Responsibility[i] (CSR) by adopting three linear stages of activity, namely: (1) *meanwhile* covering the period between site acquisition and the start of construction (2) *Construction* and (3) *Occupation*.

Table 2: Overview of Case Study Projects

Case Number	**Research title**	**Location**	**Gross development value**	**Brief Overview**
1	Seaside Market	South East England	£108.5m	Public Private partnership urban regeneration of a municipal market in the Central Business District into a mixed use development
2	Old Station	London	£47.2m	Public Private Partnership transformative regeneration of disused civil infrastructure into a mixed use development
3	Old Factory	London	£120m	Re-use of industrial site, development of a Private Rental Scheme

Appraising Built Environment Projects Using SuROI

This research represents the first empirical testing of SuROI the appraisal of anticipated sustainable benefit resulting from the wider impacts of large scale regeneration schemes delivered primarily by private sector, profit maximising property development organisation as part of a drive towards more ethical capitalism (Hermes-Investments, 2016) As confirmed earlier, work in this field has classically focused on public sector-led interventions (Aspden *et al*, 2012) or smaller, more socially orientated interventions (Bichard, 2015; Bridgeman *et al*, 2016). Adopting the standard five stages used for SROI appraisals, SuROI has evolved convention SROI into a framework of analysis suitable for application in the built environment, through the addition of wellbeing valuation in place of primary stakeholder data collection along with the inclusion of ecosystems services analysis to appraise the environment benefits offered by built environment projects. The fundamental stages of SuROI summarised in Table 3, have been outlined below, with each stage examined through its application to the three case study projects. Thus allowing the researchers to appraise the process's validity and to offer recommendations for refinement.

Table 3: Phases of SuROI Analysis

Stage	SuROI Phase	Brief Description
1	Establishing Scope and Identifying Stakeholders	Decisions about the purpose of the analysis, audience, aims and objectives of the development and culture of the developer and contractor are required.
2	Map Outcomes	Identification and development of the impacts and outputs of the scheme. Inputs relate to the financial value of the development.
3	Evidencing and Valuing Outcomes	Collect data to validate mapped outcomes and identify suitable valuation proxies.
4	Establishing Impact	A series of counterfactuals are applied to the mapped impacts and their valuation to enhance validity.
5	Calculating the Sustainable Return on Investment	Impact values are converted into present values, risk is considered and a final ratio value is developed mapping sustainable value again input costs.

Stage 1 - Establishing Scope and Identifying Stakeholders

At this stage the boundaries, aims and objectives of the analysis are determined along with decisions made in relation to the features of the scheme that it is appropriate to measure (Bichard, 2015). Thus meetings were held with senior management from the supporting organisation to determine the final case study projects, the boundaries for the study and the ethical considerations related to commercially sensitive data. Drawn from a portfolio of 27 current and future developments, it was resolved the research would examine 3 mixed use developments (see Table 1) where emphasis was placed on regenerative change as part of the masterplan and subsequent planning requirements, leading to the creation of a public-private partnership (PPP) for two of the projects. As in the work of Watson and Whitley (2016), an analytical barrier was set around each case, although this was set at the super-output area level (an area of between 400 and 1,200 households or 1,000 to 3,000 residents) rather than project level. This is important, given the onus within legislation that sustainable benefit extends beyond the boundaries of the proposed project. The outcomes under investigation were therefore those impacting on pre-determined stakeholder groups from three distinct phases of activity defined as (i) pre-development (*meanwhile*) (ii) construction and (iii) occupation. Consequently a range of impacts were captured including those directly attributable to the development's use along with societal impact occurring through the three discrete phases of activity in the wider community defined by the super output areas.

Unlike other studies adopting SROI, this study sought to appraise opportunities for appraising social value as part of Strategic Definition, the project stage at which RIBA suggest clients start to develop business cases and define core requirements. Interviews conducted by Higham (2014) with sustainability practitioners suggested that embedding sustainability at this early stage in a project's life cycle is critical if sustainability to be to truly achieved. For SROI this notion of early intervention creates problems if, as Watson and Whitley (2016) espouse, the project's final scope

is to be determined through qualitative interviews with stakeholders. To overcome this difficulty, a focus group was held with directors from the property developer to determine the overall strategic scope of the organisation, the projects and its CSR commitments. This focus group was later supplemented through semi-structured interviews with project managers and key personnel, analysis of the various documents related to the project including planning documents, social, environmental and economic impact assessments and other project documentation, and observational surveys of the proposed sites. This process identified a series of primary (those with a direct interest in the project) and secondary (not economically influencing project but affected by it) stakeholders (see table 4) who would benefit from the project and therefore subsequently formed the basis of the SuROI analysis.

Table 4: Primary and Secondary Stakeholders

Stakeholder class	**Case 1: Seaside Market**	**Case 2: Old Station**	**Case 3: Old Factory**
Primary Stakeholders	Developer	Developer	Developer
	Local Authority	Local Authority	Local Authority
	Commercial Tenants and their employees	Housing Association (affordable housing)	Investors/owners of residential units
	University, its students and employees	Residents (tenants or homeowners)	Commercial tenants
	Construction site staff and workforce	Commercial tenants	
	Scheme residents		
	Meanwhile event organisers, exhibitors, sponsors, volunteers etc.		
Secondary Stakeholders	Local community (super output area)	Local community (super output area)	Local community (super output area)
	Wider community	Wider community	Wider community
	Visitors to pre-development events	Visitors to pre-development events	Visitors to pre-development events
	Families of employees	Families of employees	Families of employees
	Families of residents	Families of residents	Families of residents
	Visitors to development during occupation	Visitors to development during occupation	Visitors to development during occupation
	Customers of businesses based on development	Customers of businesses based on development	Customers of businesses based on development

Stage 2 – Mapping Outcomes

The second stage encapsulates the identification and development of the impacts and outputs associated with the case study projects. Nicholls *et al* (2012) note this process involves establishing the input resources that will be used to deliver activities (measured as outputs) that ultimately result in outcomes for each project's identified stakeholders.

Identifying and Valuing Inputs: Determining Project Costs

Bichard (2015) assert the SuROI analysis, operationalised as an spreadsheet and referred to as Impact Map, should identify not only the costs of the contract or building, but the full costs of delivering the service. This is not possible for projects in the built environment. Whilst pre-contract financial management aims to forecast final costs, construction projects typically incur extensive cost overruns as a result of high levels of uncertainty and extensive post-contract risk (Love, *et al,* 2016). For projects such as those appraised in this research, at Strategic Definition, defined by the RIBA (2013) as the point where clients begin developing the business case and defining core project requirements, the determination of accurate input costs is notoriously difficult. Indeed it is standard practice for valuation surveyors to determine financial viability of projects using simplistic metrics of cost based on units of occupancy or gross floor area (Higham *et al*, 2017). Thus gross development cost estimates provided by the developer (see table 5) have been adopted as a proxy for input costs.

1. [i] Corporate Social responsibility is defined by the European Commission (2006) as 'a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis'. However, some such as McWilliams and Siegel (2000) avow that the extent of CSR achieved it tempered by the competition within the firm between social responsibility and profit. So for profit maximising businesses such as property developers CSR activities are minimised.

Table 5: Gross Development Cost Data and Building Breakdown

Case Nr	Development Overview	GDC Estimate (£,000)	Size (m^2)	Input costs (£/m^2)	Size breakdown					
					Residential	Student accommodation	Leisure	Retail	Office	Other
1	Mixed use PPP development offering: Residential apartments; student halls of residence; education facilities; retail and office space.	100,235	37,000	2,709	13,500	11,900	1,220	1,100	4,155	4,900
2	Mixed use PPP development offering: Residential apartments; retail and office space.	38,000	9,672	3,929	8,556	-	-	462	654	-
3	Mixed use development offering: residential apartments with retail space on ground floor.	75,000	24,925	3,009	22,900	-	-	2,025	-	-

Determining the key Outcomes and Impacts

One of the major barriers to the adoption of social return models within the built environment stems from concerns about the collection of sufficient data to allow project teams to successfully determine impacts and outcomes (Aiken *et al*, 2011; Trotter *et al*, 2014). Whilst studies by Bridgeman *et al*, (2015, 2016), Watson *et al* (2016) and Watson and Whitley (2016) provide irrefutable evidence to challenge this assertion it is important to acknowledge that they utilised the SROI methodology in an evaluative, rather than predictive format. This research sought to evidence that SuROI can be used to forecast the social value likely to be produced by a given project and thus that predictive SuROI will be of much more use to the sector given the need to provide predictive statements outlining how social value will be created,as routinely demanded by clients (Chevin, 2014). It nonetheless makes the task of identifying impact and outcomes more challenging. The extent of this difficulty is captured by Bichard (2015:23) who asserts that whilst qualitative, primary data collection is an important aspect of social return analysis, not much store can be placed on stakeholders expectations in anticipation of interventions as this is likely to be tainted by optimism bias, the difference between expectations and actual outcomes where expectations are far higher than reality (Sharot, 2011). Consequently, potential impacts and outcomes were identified from existing social, economic and environmental impact statements commissioned by the developer and these were then validated through semi-structured interviews with members of the project team held at the London office. Agreed impacts and outcomes were input into each project's Impact Map. Table 6 presents a snapshot of this process taken from the impact map for case three. The data identifies key outcomes and impacts relating to the delivery of affordable housing, a key planning condition for all three developments alongside the delivery of housing generally across the scheme.

Table 6: Example of impact and Outcome mapping for affordable housing delivery

Stakeholder	Outputs	Outcomes			
	Summary of activity	**Description of anticipated change**	**Indicator (how it would be measured)**	**Source (evidence)**	**Quantity**
Residents in new affordable homes	Ability to purchase home	Ability to afford housing	Number of affordable homes	Planning conditions	8*
	Creation of a safe living environment	Reduced fear of crime	Secured by Design	Association of British Insurers Report	132
		Live in well designed neighbourhood	Resident survey & comparison of gov. statistics on life satisfaction	Resident surveys post completion	132
	Secure by Design	Reduced costs associated with improved design features	Reduced burglaries	Association of British Insurers Report on Secured by Design	132
			Reduced vehicle thefts		
			Reduced theft from vehicles		
	Enhanced housing standards for code for sustainable homes	Reduced property running costs associated for Code for Sustainable Homes	Reduced Electricity bills	DCLG Housing Standards Review – Evidence Report	132
			Reduced Gas bills		
			Reduced water bills		
	Creation of community trust	Strengthened local social capital	Attendance at resident meetings	Meeting attendance reports	132

*Number of affordable homes the development is expected to provide.

Stage 3 – Evidencing and Valuing Outcomes

Recognised as the most complex and time-consuming stage of SROI, determining and evidencing the value of outcomes ordinarily involves prolonged fieldwork followed by extensive desk based research to establish monetary values for these (Watson and Whitley 2016). Nicholls *et al*, (2012) stress the importance of valuation underpinned by stakeholder experience, rather than predetermined metrics, in their seminal guidance on social return analysis. This would normally be achieved through extensive fieldwork involving the collection and analysis of data using quantitative research instruments issues to predetermined stakeholder groups to measure success against defined outcomes, whose results then form the basis of outcome valuations. However, Bichard (2015) asserts this approach is only credible for evaluative analysis as for predictive studies, stakeholders will rarely be in a position to understand or predict the impact of identified outcomes. To overcome this limitation Nicholls *et al* (2012) encourage the use of experience, using data from previous activity or existing experiential data for similar types of outcome. Yet this guidance is also strongly

qualified, for instance any outcomes adopted must be measurable as part of a post-occupancy study (Nicholls *et al*, 2012). It was therefore resolved to use a combination of primary data from the stakeholder interviews and national datasets to determine likely outcomes and to identify suitable measures for each outcome. Content analysis of the primary and secondary data related to each case study allowed the outcomes to be classified into a hierarchical model using 6 core indicators: Crime, Health, Ecosystems Services, Education and Training, Employment and Wellbeing, each main indicator is subsequently separated into a number of sub-indicators that were subsequently added to each impact map.

Once the outcomes had been determined and their effects quantified, monetary values are attached to each outcome. Guidance on SuROI (Bichard, 2015) strongly advocates the use of financial proxies to value each outcome. However, unlike conventional valuations, Nicholls *et al* (2012) suggests the social valuations used are normally un-tradable, and therefore do not need to retain their value as they exist outside the market mechanism. For example, the provision of a community asset such as a park will provide a social benefit with a positive social value to the community regardless of the frequency of its use. As a result, the financial proxies used are typically determined using valuation traditions associated with environmental and health economics (Watson and Whitley, 2016) alongside the emerging field of wellbeing valuation (Fujiwara, 2013; Bichard, 2015). Consequently the financial proxies adopted for this study were identified using a combination of primary data, academic, public and social enterprise literatures, existing social value assessments and established datasets such as the HACT database of wellbeing valuations (Trotter *et al*, 2014). Finally, the selected proxies were input into the social impact map alongside relevant outcomes (Nicholls *et al*, 2012). Ultimately, total incidence of impact multiplied by the proxy determines the value created by each outcome for a specific user group in a single year. Table 7 presents a snapshot of this process taken from the impact map for case three.

Stage 4 – Establishing Impact – Using Counterfactuals

As a safeguard against over-claiming value thus enhancing the validity of the stated impact for each development (Nicholls *et al*, 2012; Bichard, 2015) the values placed on outcomes are subjected to a series of counterfactuals including: deadweight, displacement, attribution and drop-off. Each counterfactual allows adjustments to be made to the initial valuation ensuring it provides a reasonable representation of the net impact. This process of interrogation is illustrated in table 8, were the four counterfactuals have been applied to the valuation of housing delivery first introduced in table 6.

Table 7: Financial Proxies Identified for SuROI analysis of case study projects

Stakeholder	Outputs	Outcomes				Valuation			
	Summary of activity	**Description of anticipated change**	**Indicator (how it would be measured)**	**Source (evidence)**	**Quantity**	**Financial Proxy**	**Value in currency (£)**	**Total Value (£)**	**Source for Proxy adopted**
Residents in new affordable homes	Ability to purchase home	Ability to afford housing	Number of affordable homes	Conditions linked to Planning Approval	8*	Wellbeing valuation of being able to afford housing	6,636	53,088	*Measuring the Social Impact of Community Investment: A guide to using the Wellbeing Valuation Approach* (Trotter *et al*, 2014)
	Creation of a safe living environment	Reduced fear of crime	Secured by Design	Association of British Insurers Report	311**	Wellbeing valuation of not being worried about crime	4750	1,477,250	As above
		Live in well designed neighbourhood	Resident survey & comparison of gov. statistics on life satisfaction	Resident surveys post completion	311**	Wellbeing valuation of feeling belonging to a neighbourhood	2252	700,372	As above
	Secure by Design	Reduced crime associated with improved design features	Reduced burglaries	Association of British Insurers Report on Secured by Design	132	Home Office Economic and Social Costs of Crime Data	4,706	621,192	*The Economic and social costs of Crime against individuals and households 2003/04* (Dubourg *et al*, 2005)
			Reduced vehicle thefts		132		5,959	786,588	
			Reduced theft from vehicles		132		1,236	163,152	
	Enhanced housing standards for code for sustainable	Reduced property running costs associated for Code for Sustainable	Reduced Electricity bills	DCLG Housing Standards Review – Evidence Report	132	DCLG Housing Standards Review	-	-	*DCLG Housing Standards Review – Evidence Report: Cost Benefit Analysis: method, sources and assumptions* (Sheppard,
			Reduced Gas bills						

	homes	Homes	Reduced water bills						2014)
	Creation of community trust	Strengthened local social capital	Attendance at resident meetings	Meeting attendance reports	311**	Wellbeing valuation of being a member of a tenants group	8,295	2,579,745	*Measuring the Social Impact of Community Investment: A guide to using the Wellbeing Valuation Approach* (Trotter *et al*, 2014)

**8 is the number affordable homes proposed*

*** Based on National statistics is assumed 311 people will occupy the housing*

Table 8: Application of Counterfactuals to Sustainable Value appraisal for Housing

Stakeholder	Outcomes			Valuation			Counterfactuals				Impact*
	Description of anticipated change	**Indicator (how it would be measured)**	**Quantity**	**Financial Proxy**	**Value in currency (£)**	**Total Value (£)**	**Deadweight (%)**	**Displacement (%)**	**Attribution (%)**	**Drop Off (%)**	
Residents in new affordable homes	Ability to afford housing	Number of affordable homes	8*	Wellbeing valuation of being able to afford housing	6,636	53,088	0	0	0	0	53,088
	Reduced fear of crime	Secured by Design	311**	Wellbeing valuation of not being worried about crime	4750	1,477,250	10	0	0	10	1,329,525
	Live in well designed neighbourhood	Resident survey & comparison of gov. statistics on life satisfaction	311**	Wellbeing valuation of feeling belonging to a neighbourhood	2252	700,372	60	0	0	10	280,149
	Reduced crime associated with improved design features	Reduced burglaries	132	Home Office Economic and Social Costs of Crime Data	4,706	621,192	95	0	82	0	5,591
		Reduced vehicle thefts	132		5,959	786,588	95	0	58	0	16,519
		Reduced theft from vehicles	132		1,236	163,152	95	0	58	0	3,426

	Reduced property running costs associated for Code for Sustainable Homes	Reduced Electricity bills Reduced Gas bills Reduced water bills	132	DCLG Housing Standards Review	-	-	-	-	-	-	-
	Strengthened local social capital	Attendance at resident meetings	311**	Wellbeing valuation of being a member of a tenants group	8,295	2,579,745	99	0	0	50	25,798

For presentation purposes, some columns have been removed.

**Drop Off has not influenced these values, drop off relates to the time value, when the data is discounted.*

Deadweight

Deadweight appraises the extent to which claimed impacts would have happened had the project not been developed. In other words, deadweight tests the extent to which an identified impact would have simply happened anyway, possibly as a result of other developments or wider socio-economic change. However, deadweight is difficult to apply in predictive studies, as both stakeholder feedback and local knowledge are scarce. It was resolved therefore to adopt a series of deadweight adjustments based on the nature of the impact using published metrics wherever possible. For instance, metrics obtained from the Homes and Communities Agency (2015) best practice guidance relating to job valuation as part of regeneration initiatives was adopted as a metric for employment creation and wider assessments of economic impact, thus these outcomes had deadweight of 66% applied. The monetary value of carbon saved due to a BREEAM excellent score (the ambition for these developments) had deadweight of 10% applied based on BRE's evidence that only 10% of the current built environment received BREEAM excellent (BRE, 2014).

Displacement

Displacement is a measure of whether an outcome will be simply moved from another place as a result of the proposed development. Whilst displacement is not relevant to every analysis (Nicholls *et al*, 2012) it is a fundamental consideration when evaluating regeneration projects, as some of the negative issues that regeneration seeks to eliminate could be simply transferred to another community. Despite these concerns, it was agreed within the research team that displacement would be unlikely within the immediate area given the significant scale and value of the regeneration projects under consideration.

Attribution

Attribution determines how much of an identified outcome can be attributed to the intervention, rather than other factors for example the way the development is managed, or as an outcome of the interactions between different stakeholder groups. For instance, metrics obtained from the Association of Chief Police Officers (N.D.) suggest the incorporation of secured by design principles within a development will reduce domestic burglary by 18% and vehicle crime by 42%. As only an 18% reduction in burglary can be attributed to Secured by design, 82% of the value must be removed. This process, evidenced in table 8, was carried out across the full range of impacts associated with the three projects.

Drop Off

Drop off measures the deterioration of an outcome due to the effects of time. In other words, drop off measures how long an outcome will last. It is expected that regeneration outcomes will dissipate as other factors start to take effect on the net benefits achieved. For example, it is expected some of the renewable energy measures will deteriorate or be superseded as a result of technological evolution as the buildings age. The buildings themselves will also eventually start to deteriorate and suffer the effects of social, economic and other forms of obsolescence thereby reducing their benefit to the community. Nicholls *et al* (2012) advise drop off is ordinarily calculated by deducting a fixed percentage from the remaining level of outcome at the end of each year after the impacts are initially observed.

Nicholls *et al* (2012) asserts that drop-off should be established using longitudinal surveys of user groups, similar those implemented as part of Watson and Whitley's (2016) post-occupancy evaluation of three cancer centres. Nevertheless Nicholls acknowledges this will not always be possible if the analysis is predictive. In such cases the effects of drop off should be established through research, using academic literature or other valid sources. Thus it was agreed, in consultation with the developer, that a range of drop off periods would be adopted and that the length of the drop off period would be dependent on the nature of the impact. Impacts identified from the meanwhile phase were given an immediate drop off, due to the temporary nature of these activities and impacts such as the creation of employment opportunities were deemed to be legacy impacts that would not reduce over time unless the development ceased to exist. The effect of the drop off counterfactual is shown in table 9, where the sustainable value generated from housing provision has been adjusted for the effect of drop off.

Table 9: Application of Drop Off Counterfactual to Sustainable Value appraisal for Housing

Stakeholder	Outcomes Indicator (how it would be measured)	Total Value (£)	Drop Off (%)	Impact	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Total
Residents in new affordable homes	Number of affordable homes	53,088	0	53,088	53,088	53,088	53,088	53,088	53,088	53,088	53,088	53,088	53,088	53,088	530,880
	Secured by Design	1,477,250	10	1,329,525	1,329,525	1,329,525	1,196,447	1,076,802	969,122	872,210	784,989	706,490	635,841	572,257	9,472,925
	Resident survey & comparison of gov. statistics on life satisfaction	700,372	10	280,149	280,149	280,149	252,134	226,920	204,228	183,806	165,425	148,883	133,994	120,595	1,996,283
	Reduced burglaries	621,192	0	5,591	5,591	5,591	5,591	5,591	5,591	5,591	5,591	5,591	5,591	5,591	55,910
	Reduced vehicle thefts	786,588	0	16,519	16,519	16,519	16,519	16,519	16,519	16,519	16,519	16,519	16,519	16,519	165,190
	Reduced theft from vehicles	163,152	0	3,426	3,426	3,426	3,426	3,426	3,426	3,426	3,426	3,426	3,426	3,426	34,260
	Reduced Electricity bills	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reduced Gas bills														
	Reduced water bills														

	Attendance at resident meetings	2,579,745	50	25,798	25,798	25,798	12,899	6,449	3,225	1,612	806	403	202	100	103,090

For presentation purposes, some columns have been removed.

**Drop Off has not influenced these values, drop off relates to the time value, when the data is discounted.*

Stage 5 – Calculating the Sustainable Return on Investment

The calculation of the SuROI ratio requires several separate elements to be brought together to give a final ratio of value. This stage of the process includes calculating the ratio, projecting into the future and undertaking sensitivity analysis to mitigate the effects of risk.

Calculating the SuROI ratio

The SuROI ratios illustrated in Table 10 have been calculated by dividing the value of the outcomes by the estimated input costs for each project. SuROI ratios represent estimates of the overall sustainable value created once occupation has been achieved for each project. The ratio is expressed as the sustainable return generated, expressed as a monetary unit, normally pounds sterling for each pound expended in delivering the scheme. For example, case study 1 is forecast to generate £5.78 of sustainable value for each £1 the developer spends.

Table 10: Overview of Case Study Projects

Case number	**Location**	**Gross development value**	**Net Sustainable Value Generated (discounted)**	**Sustainable Value: Construction Costs Ratio**
1	South East England	£108.5m	£629.9m	5.78:1
2	London	£47.2m	£154.9m	3.17:1
3	London	£120m	£38.3m	0.67:1

Projecting into the future

The first ratio emerging from the SuROI is a snapshot illustrating the sustainable value attributed from the full scheme expressed against the gross development cost incurred by the developer and other stakeholders related to its delivery. Projecting into the future allows the analyst to present further SuROI ratios illustrating the effects of drop offs identified earlier. For example, it is expected that benefits associated with the scheme will appear at different stages in the development cycle. Not all benefits emerging from development will be realised immediately, and some will only be realised during the meanwhile period whilst the site is used as a community asset. These will drop off and be replaced with sustainable value attributable to the construction phase as the project moves forwards. These benefits will eventually be replaced with the full array of sustainable benefits attributable to occupancy. Thus it was resolved to establish three ratios for the project;one at the end of year 1 to illustrate the sustainable value resulting from meanwhile activities; a second ratio at the end of year 5 to reflect the net positive sustainable value effects of the construction phase, and a third ratio at the end of year 9 to show sustainable value once occupation has taken place. All financial returns have been subjected to discounting using the 3.5% social time preference rate outlined in HM Treasury's *Green Book* (HM Treasury, 2004),

Sensitivity Analysis

The final step identified by Nicholls *et al* (2012) and replicated in Bichard's (2015) SuROI methodology requires the analyst to undertake a simple risk appraisal using Sensitivity Analysis to ensure validity. RICS guidance on development appraisal strongly recommends any financial appraisal has fully sensitivity testing prior to

reporting (RICS, 2012). The RICS guidance further advocates that any counterfactuals are also examined to ensure the validity of the judgements made and advice offered. As a result, a series of sensitivity checks were applied to the following features of each impact map:

- Estimates of deadweight, attribution and drop-off;
- Financial proxies;
- The quantity of the outcome; and
- The value of inputs

In this regard, sensitivity testing aims to calculate the amount each counterfactual and estimate needs to be changed to take the SuROI ratio to 1.0 i.e. from positive to negative, or vice-versa. (Nicholls *et al*, 2012). Nicholls further states that, following the identification of the main areas of significance within the SROI framework, these subsequently become priorities for social value delivery. However, in the case of SuROI, given the significant values associated with built environment projects, the use of sensitivity analysis allows the researchers to present different situations to the developer ranging from an optimistic view of sustainable return to a more pessimistic view, depending how the various variables within the analysis are manipulated, thus allowing the developer to safeguard against over-claiming.

Results from SuROI Analysis

This paper delivers a critical methodological evaluation of Bichard's (2015) conceptual *Sustainable Return on Investment* (SuROI), an early attempt to adapt and extend SROI methodology for built environment regeneration projects. Through application of the methodology to three UK-based regeneration projects. Summary results from the analysis, presented in tables 10 – 15, demonstrate the potential insights and knowledge that SuROI can provide about the potential sustainable benefit projects can deliver without compromising the bottom line profitability for the developer. The monetized data presented includes the total impact produced for a range of stakeholders including *inter alia* end users, community groups and construction workers. Impact/m^2 analysis, advocated by Watson and Whitley (2016) is adopted to aid comparison, given the strong linkage with unit level analysis for both development costs and financial return.

Case study 1, a Public Private Partnership in the South East of England, sought to regenerate an existing municipal site in a city centre location. Results from SuROI analysis forecast the scheme will create £479m of sustainable value against gross development costs of approximately £100m. After the benefit flow has been discounted for social time preference, the analysis revealed a SuROI ratio of 1:4.78 (see Table 11). In other words, this regeneration project will deliver £4.78 in sustainable benefit for the wider community for every £1 the invested by the developer. Table 12 provides a further breakdown of this analysis considering the three distinct phases of activity alluded to earlier in this paper. Firstly, by offering the site as a community resource whilst re-development plans are formulated, a forecasted £36.6m of sustainable value will flow into the local community, with almost 50,000 people anticipated to visit the array of different cultural events that will be based at the site. Once development commences, it is expected the construction process will generate a further £20m of positive sustainable value through localised supply chains, apprenticeships and job creation. However, the vast majority of sustainable benefit will result from occupation once development works are

concluded. It is forecast, the overall scheme will contribute £479m (see Table 11) of sustainable value through enhanced wellbeing and employment creation.

Table 11 – Sustainable Value Summary for Case Study 1

Category of Value	**Value (£,000**
Inputs (Forecasted Gross Development Costs)	100,235
Present Value of Outcomes	626,837
Net Present Value	479,068
SuROI Ratio	**1:4.78**

Table 12 – Sustainable Value Generated by Factor and Phase for Case Study 1

Factor	**Sustainable Value (£,000)**			
	Meanwhile Phase	**Construction Phase**	**Occupancy Phase**	**Factor Total**
Wellbeing	27,744	13,177	204,062	244,983
Health	6,997	6,682	161,537	175,217
Crime	3,329	516	135,498	136,014
Education and Training	0	0	0	0
Ecosystems Services	783	0	4,975	4,975
Employment	728	82,	65,566	65,648
Total	37,742	20,547	571,638	626,837

A similar situation can be observed for case study 2. Once again, this appraises a major housing-led regeneration project delivered in partnership with a public sector organisation via a PPP. In contrast with case study 1, the second project aims to re-develop a disused piece of civil infrastructure. Returning £102m of sustainable value to the local community over a ten year period (discounted) against anticipated gross development costs of £38m, the second case study is forecast to generate a sustainable value ratio of 1:2.68, or £2.68 of sustainable benefit will be returned to the local community for every pound invested by the development partnership involved in delivering this transformative regeneration project (see Tables 13 and 14).

Table 13 – Sustainable Value Summary for Case Study 2

Category of Value	**Value (£,000)**
Inputs (Forecasted Gross Development Costs)	38,000
Present Value of Outcomes	148,778
Net Present Value	101,778
SuROI Ratio	**1:2.68**

Table 14 – Sustainable Value Generated by Factor and Phase for Case Study 2

Factor	**Sustainable Value (£,000)**			
	Meanwhile Phase	**Construction Phase**	**Occupancy Phase**	**Factor Total**
Wellbeing	4,616	17,296	10,675	32,587
Health	1,600	729	10,307	12,636
Crime	2,024	178	13,090	15,293
Education and Training	0	0	0	0
Ecosystems Services	38	0	1,130	1,168
Employment	2,701	41,505	49,000	93,206
Total	10,980	59,708	84,203	154,891

In contrast, the third case study relates to the redevelopment of an old industrial site in East London. Benefiting from the legacy effect of the London 2012 Olympic Games, this project sought to transform a derelict industrial site into a high-rise housing development. Given the nature of the project, sustainable returns have been depressed when compared to the PPP schemes evaluated earlier. The SuROI analysis nevertheless revealed a positive sustainable benefit valuation of £36.8m against anticipated gross development costs of £75m. This represents a SuROI ratio of 1:0.49, (see Tables 15 and 16 for a full breakdown) meaning the scheme fails to meet the social value contribution demanded in the Social Value Act 2012. It nonetheless reinforces the positive impact that 'meanwhile use' can have. Allowing the site to be used by a local social enterprise during pre-construction, the developer returned £2.2m in sustainable benefit value to the local community, with remaining sustainable benefit delivered through both construction (£5.7m) and occupation (£34.5m). The majority of the sustainable benefit associated with this project stems from employment and enhanced wellbeing, and even though this was a private rental scheme (PRS) targeted at overseas investors, it nevertheless is forecast to continue to provide community benefit through the provision of a cultural space which the developer hopes to lease to the same social enterprise occupying the site during the meanwhile phase for a very low or nominal rent.

Table 15 – Sustainable Value Summary for Case Study 3

Category of Value	**Value (£,000)**
Inputs (Forecasted Gross Development Costs)	75,000
Present Value of Outcomes	38,199
Net Present Value	36,801
SuROI Ratio	**1:0.49**

Table 16 – Sustainable Value Generated by Factor and Phase for Case Study 3

Factor	**Sustainable Value (£,000)**			
	Meanwhile Phase	**Construction Phase**	**Occupancy Phase**	**Factor Total**
Wellbeing	2,215	1,751	24,810	28,776
Health	0	7	117	124
Crime	0	48,	2,264,	2,311
Education and Training	0	0	0	0
Ecosystems Services	0	0	2,480	2,480
Employment	0	3,857	4,760	8,617
Total	2,215	5,663	34,431	42,309

Discussion

Developments in research assessing the merits of early stage sustainability-led appraisals of built environment projects have advanced significantly with the publication of numerous studies appraising the relative merits and indeed severe limitations of over 600 different sustainability evaluation frameworks (Higham *et al*, 2016) of which only about 100 are realistically usable in practice. As Brandon and Lombardi (2011) point out, the majority of these frameworks fail to reflect the complexities they are designed to address. The solution that Brandon and Lombardi (2011) support will only be realised through the development of highly sophisticated, composite frameworks for the evaluation of sustainability that place equal emphasis on the delivery of economic wellbeing, social inclusion and environmental responsibility (Langston and Ding, 2001).

As a consequence, the majority of research published in this area emphasises the arguments put forward in the work of Ding (2005, 2008) and San-Jose *et al* (2005) that was later reinforced in the seminal work of Brandon and Lombardi (2011) collectively called for the adoption of multi-facetted evaluation frameworks, underpinned by scoring and weighting of different criteria to provide an overall sustainability score similar to that evidenced in the BREEAM appraisal methodology. This argument can now be challenged as a result of the findings of this study and the earlier work of Watson *et al*, (2016) and Watson and Whitley (2016) related to post-occupancy evaluation that collectively provides evidence that monetary evaluation can be effectively implemented to evaluate sustainable performance. Indeed the empirical testing of SuROI reported in this paper shows that the approach can be used to appraise the extent to which sustainability is embedded within a scheme using a monetised metric.

The development of SuROI also provides an important tool for public and third sector organisations facing the challenge of evidencing wider non-financial impacts of built environment projects on the wellbeing of individuals, communities and the environment (Chartered Institute of Housing, 2015) at key project milestones demanded by the Social Value Act (2012), especially as the SuROI methodology has the potential to be applied at key stages as a predictive and confirmatory model to ensure social value is both embedded and delivered (Bichard, 2015). The synergies that the methodology provides with conventional project appraisal techniques are also worthy of note. Given norms of practice within the sector dictate the use of monetary

units to compare project alternatives (Ashworth and Perera, 2015) and SuROI provides decision makers with a methodology that allows them to appraise profitability and sustainable benefit on an equal footing. Nevertheless Haapio and Viitaniemi (2008) and Ding (2008) question the validity of monetising sustainability, a theoretical construct far removed from the operation of the market mechanism. At the core of their objection is the assertion that monetary units are likely to limit the validity of any sustainability evaluation produced. This argument can, however, be questioned as a result of this research. The empirical application of SuROI illustrates that a range of different benefits drawn from social, economic and environmental spheres of sustainability can be effectively appraised using monetary units and systematically integrated into existing project appraisal methodologies.

This is not, however, to argue SuROI is practice-ready, as this study has identified a number of challenges and technical limitations from the implementation of SuROI in practice. These issues centre around the following major areas: similarities with SROI, usefulness and validity of ecosystems services analysis, inclusion of stakeholders in predictive analyses, construction specific financial proxies, calculation of the SuROI ratio and validity and reliability of the analysis. It is clear these issues must be resolved before the methodology can be recommended for widespread use.

The first of these challenges relate to the methodology's similarity with SROI. Bichard (2015) is deliberately vague on the distance between SuROI and SROI. Yet during the course of this research, numerous similarities between SuROI and SROI have emerged. Despite this, it is clear the modifications forming part of SuROI have allowed the traditional social return on investment tool to be extended to forecast change not only impacting on social actors but also wider aspects of economic and environmental sustainability critical to the built environment and compliance with the Public Services (Social Value) Act 2012 This provides a far more robust response to the concerns of Langston and Ding (2001) and Brandon and Lombardi (2011) that sustainability appraisal frameworks lack the holistic sustainability perspective they feel is a fundamental step towards a sustainable built environment.

A number of technical limitations also emerged, for instance a core feature of SROI and to an extent SuROI is the need to determine *theory of change*. In other words, both methodologies advocate a need to be clear about the social change to be achieved through the project. As this research illustrates, this is not a primary objective for organisations commissioning built environment projects which are normally driven by financial motivations. Thus *theory of change* presents a significant barrier to implementation. Coupled with this are the difficulties the research shows in trying to determine key project stakeholders at the outset. Watson and Whiley (2016) suggest SROI is very stakeholder orientated, so without an understanding of the extent of the complex web of interconnected stakeholders it cannot be clear at the outset if the analysis can capture the full nature of the project's eventual impact. Unfortunately Bichard (2015) had not addressed these issues when devising SuROI. This finding further reinforces Watson and Whiley's (2016) concerns about both the subjective nature and reliability of outcomes forecast given the construction sectors prevailing culture of retrospective social value justification (Russel, 2013).

Additional problems were identified with the technical implementation of SuROI, these related primarily to the ability to collect, identify and evaluate the data needed

to inform the appraisal process given the complexity and scale of projects appraised. As both Nicholls *et al*, (2012) and Bichard (2015) make abundantly clear, stakeholder involvement in the identification and measurement of impact is critical. Earlier studies (Bridgeman *et al* 2015, 2016; Watson *et al* 2016 and Watson and Whiley 2016) have revealed that when SROI is adopted as an evaluative tool, although time-consuming, it is possible to collect stakeholder perception data to inform analysis. However, this study questions the achievability of this objective. The research reveals that when social value is forecast from the outset of the project as a fundamental requirement of Social Value legislation, it is impossible to either identify or engage stakeholders effectively. The research further suggests the lack of information available at this stage is also likely to make any analysis highly subjective and even if stakeholders were identified, the likelihood is that optimism bias would affect the results of any survey. Instead this study demonstrates that wellbeing valuation techniques advocated by Fujiwara (2013) can be integrated into SuROI thereby replacing the need for extensive stakeholder involvement. Wellbeing valuation is already adopted for the appraisal of social value at the procurement stage as part of value led tender evaluations in the construction sector (HACT, 2016).

Reaffirming the difficulties observed in earlier studies undertaken by Bridgeman *et al*, (2015) and Watson, *et al* (2016) the research revealed a further technical problem related to the availability of suitable proxies by which monetary valuations can be elicited for some of the identified outcomes. Once again, this research raises questions about the suitability of existing datasets as a source of financial proxies. Whilst this research endorses the earlier position that datasets such as HACT, Global Value Exchange, Economics of Ecosystems and Biodiversity (TEEB), and Unit Cost Database provided by New Economy can be used for built environment focused analysis, it is hard to escape that these datasets are typically aimed at specific market segments, resulting in a less than perfect alignment with the built environment. Thus raising important questions about the validity of the analysis produced. It is therefore clear that if social value is to be more widely adopted within the built environment, urgent work is required to develop a sector specific database of financial proxies that will improve the validity of the social value forecasts provided. Additional challenges presented by tool related to the reliability of predictions required for the analysis, for instance, when evaluating pre-construction or *meanwhile* activities there was no reliable way of predicting the numbers of people who would participate or the nature of the events that would be held. As a result, analysis of past data from similar interventions became the only reliable source of data.

The final technical challenge emerged with the calculation of the SuROI ratio and the validity and reliability of the social value predicted. Establishing and inputting cost data presented a challenge given commercial sensitivities and the lack of robust cost data beyond simple single rate estimates of cost. Given the focus of SuROI on total cost of inputs there was some debate about the nature of the project, as is common in commercial real estate various aspects of the project would be completed to varying levels of fit out. For instance office space and residential apartments would be fully complete. Whereas retail space would be provided as a shell, ready for the tenant to complete fit out works. The decision was taken to use the property developer's costs and make an adjustment for additional fit out costs using available construction cost data sources. Discounting also presented a significant issue, given the focus and nature of different project stages, it was determined that varying discounting periods

would need to be applied to the different project phases due to the impact of counterfactuals. Finally, it was realised through the research process that the validity and reliability of SuROI could not be fully established as part of this study. Higham *et al* (2016) explain that tools such as SuROI are limited in their validity as they are designed to provide forecasts or evaluations of sustainable benefit at key decision-making points. The widely respected RIBA (2013) plan of work makes abundantly clear, designs are extremely fluid at this stage, leaving the possibility that after a detailed social value appraisal, the project could be subject to significant change, further impacting on the reliability of early indicators identified and associated values determined. This finding adds weight to Farag et al's (2016) calls for the development of a built environment specific social value process model into which tools such as SuROI can be incorporated and through which social value can be forecast, monitored and evaluated.

Conclusions

The construction industry is committed to delivering sustainability to its clients and other stakeholders. As a result, frameworks assisting built environment professionals to identify and appraise sustainability have become an essential element of practice, if only to act as a series of stepping stones towards the delivery of a less un-sustainable built environment. However, the reliance on multi-criteria analysis and obsession with scoring and weighting project features against predetermined criteria has significantly impacted on both the transferability of results and their usefulness as part of the project decision-making processes used by a capitalist informed sector where return on investment through yield is critical to survival and thus to project initiation. Yet the emerging social value agenda has challenged both the public sector, and the construction firms eager to capture part of this £40bn order book, to question the wider benefits that major developments are delivering. This, and the drive for a more ethical capitalism typified by increasing focus on CSR, has led to the 'business as usual' model being challenged as developers and constructors alike are increasingly expected to evidence the social benefit delivered by their projects in a meaningful, transferrable and, importantly, transparent and auditable way. Bichard's work identified SROI as a well-developed method for capturing social benefit, although its suitability to the built environment was unclear, with limited literature evaluating SROI within a built environment context. Bichard consequently proposed a series of amendments to the basic tenets of SROI to improve its alignment with the built environment. Yet the resulting SuROI framework remained conceptual, lacking real-world empirical testing. This research paper has provided an account of the first applied social value research focused on the private speculative development sector using the conceptual SuROI framework.

The research also makes a more robust contribution to literature, as the first study to appraise the potential transfer benefits that SuROI presents to private sector organisations looking to appraise the sustainable benefits emanating from their projects at the feasibility stage. In response, the research has revealed that SuROI can be used to inform project delivery in the private sector. Its application to three major private sector-led regeneration projects illustrates the potential for SuROI to generate novel insights into how sustainable benefit can be delivered without comprising the bottom line return for example, the introduction of meanwhile activities is likely to reduce building security costs whilst also delivering extensive sustainable benefit to

the local community. Furthermore the research illustrates how the methodology can be dovetailed into existing project appraisal methodologies without the need to materially change existing practices.

However, the work has also revealed a number of methodological challenges that need to be resolved before widespread application will be possible. There is an urgent need for industry and academia to develop a series of financial proxies that are specific to the built environment and are applicable throughout the project lifecycle. This lack of indicators raises important questions about how the sector is positioned to satisfactorily evidence social value in compliance with the evolving legislative landscape. Additionally, amendments are also required to the methodology if the challenges associated with monetisation as an evaluating measure are to be overcome. The research illustrates such a metric currently fails to support the valuation of the more abstract or softer benefits associated with the project. Moreover, problems collecting, identifying and evaluating data to inform the model given the complexity and scale of the project, the significant time and expense associated with the valuation and finally the inability to benchmark the report on completion. Whilst these findings have implications for public and private sector organisations desperately trying to respond to the social value challenge, they demonstrate the potential benefits of adopting SuROI as a response to both social value legislation and the organisational need to demonstrate ethical capitalism within a business as usual model, however, due to the limitations inherent in the research design, the findings from this study cannot be generalised beyond the case study organisation or the projects appraised. In terms of academe this study points to the need for further underpinning work related to the general concepts of early stage sustainable benefit evaluation. More specifically the research evidences an urgent need for academe to establish a robust database of social value indictors similar to those developed by the University of Manchester and the Housing Associations Charitable Trust to help the sector respond adequately to the challenging legislative frameworks introduced by the social value act.

References

Aiken, M., Cairns, B., Taylor, M. & Moran, R. (2011) *Community Organisations Controlling Assets: A Better Understanding*. York: Joseph Rowntree Foundation.

Arudson, M; Lyon, F; McKay, S. & Moro, D. (2010) *The Ambitions and Challenges of SROI*. Working Paper. Birmingham: Third Sector Research Centre

Arudson, M; Lyon, F; McKay, S. & Moro, D. (2013) Valuing Social Value? The Nature and Controversies of Measuring Social Return on Investment. *Voluntary Sector Review*, 4(1), pp.3-18.

Ashworth, A & Perera, S. (2013) *Cost Studies of Buildings.* Oxon: Routledge.

Aspden, P., Ball, A., Roberts, M. & Whitley, T. (2012) A holistic evidence-based approach to retrofit in Social Housing. Paper presented at the Retrofit 2012 Conference 24th – 26th January. Salford: University of Salford.

Bichard, E. (2015) *Developing an approach to sustainable return on investment in the UK, Brazil and the USA*, London*:* RICS Research Trust.

Brandon, P.S. and Lombardi, P. (2011) *Evaluating Sustainable Development in the Built Environment*, Oxford: Wiley-Blackwell.

Bridgeman, J, Murdock, A, Maple, P, Townley, C & Graham, J (2015) Putting a value on young peoples journey into construction: Introducing SROI at Construction Youth Trust. In: Raiden, A. and Aboagye-Nimo, E. (Eds.), *Proceedings 31st Annual ARCOM Conference, Association of Researchers in Construction Management, Lincoln, 7-9 September*, pp. 207-216.

Bridgeman, J; Maple, P; Murdock, A; Hardy, S & Townley, C. (2016) Demonstrating the Social Value of a Schools Engagement Programme: Introducing Young People to the Construction Professions. *In:* Chan, P.W (Ed) and Neilson, C. (Ed) *Proceedings 32nd Annual ARCOM Conference,* 5-7 September 2016, Manchester, UK, Association of Researchers in Construction Management, pp.1007-1016.
British Research Establishment (BRE) (2014) BREEAM UK New Construction, Non-Domestic Building Technical Manual [Online] available at: http://www.breeam.com/filelibrary/BREEAM%20UK%20NC%202014%20Resources/SD5076_DRAFT_BREEAM_UK_New_Construction_2014_Technical_Manual_ISSUE_0.1.pdf. [Accessed 31st October 2016].
Burke, C. & King, A. (2015) Generating Social Value through Public Sector Construction Procurement: A study of local authorities and SMEs. *In:* Raiden, A. (Ed) and Aboagye-Nimo, E. (Ed), *Proceedings 31st Annual ARCOM Conference*, 7-9 September 2015, Lincoln, UK. Association of Researchers in Construction Management, pp. 387-396.
Cabinet Office (2015) *Social Value Act Review*. London: Cabinet Office.
Chartered Institute of Housing. (2015) New approaches to delivering social value [online]. Available from: http://www.cih.org/resources/PDF/Policy free download pdfs/New approaches to social value.pdf. [Accessed 31st October 2016].
Chartered Institute of Housing (2015) New approaches to delivering social value [Online]. Available from: http://www.cih.org/resources/PDF/Policy free download pdfs/New approaches to social value.pdf.[Accessed: 22nd December 2016].
Chevin, D. (2014) Gearing up for giving something back. [Online] Available from: http://www.constructionmanagermagazine.com/agenda/social-value-gearing-giving-back/. [Accessed 31 October 2016].
Communities and Local Government (2010) Valuing the benefits of Regeneration. Economics Paper 7: Volume 1 – Final Report. London: Department of Communities and Local Government.
Communities and Local Government (2012) National Planning Policy Framework. London: Department of Communities and Local Government.
Colantonio, A. (2007) Social Sustainability: An exploratory analysis of its definition, assessment methods, metrics and tools. EIBURS Working Paper Series, 2007/01. Oxford: Oxford Brookes University.
Colantonio, A. (2009) Social sustainability: a review and critique of traditional versus emerging themes and assessment methods In: Horner, M. and Price, A. and Bebbington, J. and Emmanuel, R., (eds.) Sue-Mot Conference 2009: Second International Conference on Whole Life Urban Sustainability and Its Assessment: Conference Proce. Loughborough University, Loughborough, 865-885.
Colantonio, A. & Dixon, T. (2010) *Urban Regeneration and Social Sustainability: Best Practice from European Cities*. Oxford: Whiley.
Darby, L. & Jenkins, H. (2006) Applying Sustainability Indicators to the Social Enterprise Business Model. *International Journal of Social Economics,* 33(5), pp.411-431.
Dempsey, N., Bramley, G., Power, S. & Brown, C. (2011) The Social Dimension of Sustainable Development: Defining Urban Social Sustainability. *Sustainable Development,* 19(5), pp.289-300.
Dillard, J., Dujon, V. & King, M.C. (2009) *Understanding the Social Dimension of Sustainability*. Oxon: Routledge.
Ding, G.K.C. (2005) Developing a multi-criteria approach for the measurement of sustainable performance. *Journal of Building Research and Information*. 33(1), pp. 3-16
Ding, G.K.C. (2008) Sustainable Construction – The role of environmental assessment tools. *Journal of environmental management*, 86, pp. 451-464.
Dixon, T. (2012) *Creating Strong Communities - Part 2: Developing the Framework*. London: Berkeley Group.
Dunn, H. (2012) *Accounting for Environmental Impacts: Supplementary Green Book Guidance*. London: HM Treasury.

Edum-Fotwe, F.T. and Price, A.D.F. (2009) A social ontology for appraising sustainability of construction projects and developments. *International Journal of Project Management*, 27, pp.313-322.
Emmanuel, R. (2012) Editorial: Assessment of Sustainability in the Built Environment: Possible Directions for Developing Countries. *Built Environment Sri Lanka*, 11(1) pp.1
Emmerson, J. & Twersky, F. (1996) New Social Entrepreneurs: The Success, Challenge and Lessons of Non-profit Enterprise Creation. San Francisco: Roberts Foundation
European Commission (2006), *Implementing the Partnership for Growth and Jobs: Making Europe a Pole of Excellence on Corporate Social Responsibility, Communication from the Commission to the European Parliament*, Belgium: Commission of the European Communities.
Fellows, R. and Liu, A. (2008) *Research Methods for Construction*. Oxford: Wiley-Blackwell.
Fortune, C. & Cox, O. (2005) Current Practices in Building Project Contract Price Forecasting in the UK, *Engineering, Construction and Architectural Management*, 12(5), pp.446-457.
Fujiwara, D. (2010) *The Department of Work and Pensions Cost Benefit Analysis Framework: Methodologies for estimating and incorporating the wider social and economic impacts of work in Cost-Benefit Analysis of employment programmes*. London: Department for Work and Pensions.
Fujiwara (2015) The Seven Principle Problems of SROI [Online] Available from: http://www.simetrica.co.uk/single-post/2015/08/11/The-Seven-Principle-Problems-of-SROI [Accessed: 31 October 2016]
Fujiwara, D, & Campbell, R. (2011) Valuation Techniques for Social Cost Benefit Analysis [Online] Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/209107/greenbook_valuationtechniques.pdf [Accessed: 31 October 2016]
Haapio, A. & Viitaniemi, P. (2008) a critical review of building environmental assessment tools. *Environmental Impact Assessment Review*. 28(7), pp. 469-482.
Higham, A.P. (2014) *Conceptual Framework for the Sustainable Benefit Evaluation of UK Social Housing Projects*. Ph.D. Sheffield Hallam University.
Higham, A.P., Fortune, C.J. & Boothman, J.C. (2016) Sustainability and Investment appraisal for Housing Regeneration Projects. *Structural Survey*, 34(2), pp.150-167
Higham, A., Bridge, C. & Farrell, P. (2017) *Project Finance for Construction*. Oxford: Routledge.
Hermes-Investments (2016) Diversity – Institutional Investors rising to the challenge. [Online] Available from: https://www.hermes-investment.com/ukw/wp-content/uploads/sites/80/2016/09/Responsible-Capitalism-and-diversity-270916.pdf. [Accessed 31st October 2016].
H.M. Treasury (2003) *The Green Book: Appraisal and Evaluation in Central Government*. London: HM Treasury.
Homes and Communities Agency (2015) *Calculating Cost Per Job: Best Practice Note*, 3rd Ed. London: Homes and Communities Agency
Hurley, L., Ashley, R. & Mounce, S. (2008) Addressing Practical Problems In Sustainability Assessment Frameworks. *Proceedings of Institution of Civil Engineers – Engineering Sustainability*, 161(1), pp.23-30
Krley, G., Münscher, R. & Mülbert, K. (2013) Social Return on Investment (SROI): State-of-the-art perspectives. Heidelberg: Universtat Heidelberg.
Love, P.E.D, Ahiaga-Dagbu, D.D. & Irani, Z. (2016) Cost overruns in transportation infrastructure projects: Sowing the seeds for a probabilistic theory of causation. *Transport Research Part A*, 92, pp.184-194.
Langston, C.A. & Ding, G.K.C. (2001) *Sustainable Practices in the Built Environment*. Oxford: Butterworth-Heinemann.
Magee, L; Scerri, A & James, P. (2012) Measuring Social Sustainability: A community Centred Approach. *Applied Research Quality of Life*, 7, pp. 239-261

Maughan (2012) Monitoring and Evaluating Social Impacts in Australia – Working Paper CW003. [Online], Available from: http://www.crc-rep.com.au/resource/CW003_MonitoringandEvaluatingSocialImpactsAustralia.pdf (accessed 17th July 2015)
McWilliams, A and Siegel, D. (2000) Corporate Social Responsibility and Financial Performance Correlation or Misspecification? *Strategic Management Journal.* 21(5), pp.603-609.
Millar, R. & Hall, K. (2013) Social Return on Investment (SROI) and Performance Measurement. *Public Management Review*, 15(6), pp.923-941.
Murphy, K. (2012) The Social Pillar of Sustainable Development: A literature review and framework for policy analysis. *Sustainability, Science, Practice & Policy* 8(1) 15-29
National Audit Office (2013) Over Optimism in Government Projects. [Online] available from: https://www.nao.org.uk/wp-content/uploads/2013/12/10320-001-Over-optimism-in-government-projects.pdf [31st October 2016]
Nicholls, J; Lawlor, E; Neitzert, E & Goodspeed, T. (2012) Cabinet Office Guide to Social Return on Investment. London: Cabinet Office.
Nicholles, N., Vardakoulias, O. and Johnson, V. (2012) Counting on Uncertainty: The Economic case for community based adaption in North East Kenya. London: NEF.
Peattie & Morley (2008) Social Enterprises: Diversity and Dynamics, Contexts and Contributions: A research Monograph. Cardiff: ESRC Centre for Business Relationships.
Proverbs, D. & Gameson, R. (2008) Case Study Research. In: Knight, A and Ruddock, L (eds) (2008) *Advanced Research Methods in the Built Environment*. Oxford: Wiley-Blackwell.
Remenyi, D; Money, A; Price, D; & Bannister, F. (2002). The creation of knowledge through case study research. *Irish Journal of Management*, *23*(2), pp. 1-17.
Royal Institute of British Architects (RIBA) (2013) RIBA Plan of Work Overview [Online] Available at: https://www.architecture.com/files/ribaprofessionalservices/practice/ribaplanofwork2013overview.pdf [Accessed: 31 October 2016]
Royal Institution of Chartered Surveyors (RICS) (2012) *Financial Viability in Planning, RICS Guidance Note*. Coventry: RICS.
Robson, C. (2002) *Real World Research: A Resource for Social Scientists and Practitioner-Researchers*, 2nd Ed. London: Blackwell Publishing Ltd.
Rotheroe, N. & Richards, A. (2007) Social Return on Investment and Social Enterprise: Transparent accountability for sustainable development. *Social Enterprise*, 3(1), pp.31-48
San-Jose, J.T; Losada, R; Cuadrado, J. and Garrucho, I. (2005) Approach to the quantification of the sustainable value in industrial buildings. *Building and Environment*, 42, pp.3916-3923
Schweber, L. (2013) The effect of BREEAM on clients and construction professionals, *Building Research and Information*, 41(2), pp. 129-145.
Sharot, T (2011) The Optimism Bias, *Current Biology*, Vol.22, Iss.23 pp.R941-R945.
Silberberg, S., Lorah, K., Disbrow, R. and Muessig, A. (2013) *Places in the Making: How placemaking builds places and communities.* Massachisetts: Massachisetts Institute of Technology.
Slater, I; Lelliott, S; Rooke, A & Koessi, G. (2013) L&Q Regeneration Area Impact Assessment Research. London: L&Q Group.
Social Impact Investment Taskforce (2014) Impact investment: The invisible heart of markets [Online] available from: http://www.socialimpactinvestment.org/reports/Impact%20Investment%20Report%20FINAL[3].pdf [22nd December 2016]
Social Value International (N.D) What is social Value? [Online] available from: http://socialvalueint.org/what-is-social-value/ [22nd December 2016]
Somers, A.B. (2005) Shaping the balanced scorecard for use in UK social enterprises. *Social Enterprise Journal.* 1(1), pp.43-56
Spash, C.L. (1997) Ethics and environmental attitudes with implications for economic valuation, *Journal of Environmental Management*, 50, pp.403-416

Stake, R.E. (2005) Qualitative Case Studies. In: Denzin, N.K. and Lincoln, Y.S. (eds) (2008) *The Sage Handbook of Qualitative research*, 3rd Ed. London: Sage Publications.
Temple, N., Wigglesworth, C & Smith, C. (2014) *Communities Count: The Four Steps to unlocking social value*. London: Social Enterprise UK.
Trotter, L., Vine, J., Leach, M. & Fujiwara, D. (2014) *Measuring the social impact of community investment: A guide to using the wellbeing valuation approach*. London: HACT.
Vallance, S., Perkins, H.C. & Dixon, J.E. (2011) What is social sustainability? A clarification of Concepts. *Geoforum*, 42(3), pp. 342-348.
Vardakoulias, O. (2013) Economics in Policy-making Briefings 4: Social CBA and SROI. Working Paper (4), London: New Economics Foundation.
Vardakoulias, O. (2014) Simplified guidelines for social cost benefit analysis of climate change adaption project on a local scale. London: NEF Consulting
Watson, K.J., Evans, J., Karvonen, A. & Whitley, T. (2016) Capturing the social value of Buildings; The Promise of Social Return on Investment. *Building and Environment*, 103 pp.289-301
Watson, K.J. & Whitley, T. (2016) Applying Social Return on Investment (SROI) to the Built Environment. *Building Research and Information* [Online]. Available from: http://www.tandfonline.com/doi/full/10.1080/09613218.2016.1223486 [Accessed: 31st October 2016
Weingaertner, C. & Moberg, A. (2011) Exploring Social Sustainability: Learning from Perspectives on Urban Development and Companies and Products. *Sustainable Development*, 22(2), pp.122-133.
Wilkes, V. & Mullins, D. (2012) Community Investment by Social Housing Organisations: Measuring the Impact. Working Paper. Birmingham: University of Birmingham (March)
Woodcraft, S. (2011) *Design for Social Sustainability: A framework for creating thriving communities*. London: The Young Foundation.
Woodcraft, S. (2012) Social Sustainability and New Communities: Moving from Concept to Practice in the UK. *Procedia – Social and Behavioural Sciences, 68, pp.29-42.*
Yin, R.K. (2014) *Case Study Research Design and Methods*. 5th Ed. London: Sage Publications Ltd